

Appl. No. 10/533,141
Amdt. dated September 13, 2007
Reply to Office Action of June 13, 2007

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IN THE CLAIMS:

1. (Currently Amended) A differential circuit including a differential amplifier circuit having a differential element provided in a signal input circuit, a constant current source connected to the differential element, and loads respectively connected to the differential element; and a source follower circuit that outputs a differential voltage based on voltage drops developing across the loads,

comprising a current supply circuit that supplies a given current to the loads connected in series with the differential element when the differential element is off and that has an end connected to a connection node between said loads and said differential element and that has another end connected to a connection node between said differential element and said constant current source.

2. (Currently Amended) A differential circuit including a first differential amplifier circuit having a first differential element provided in a signal input circuit, a first constant current source connected to the first differential element, and a first and a second loads respectively connected to the first differential element; a second differential amplifier circuit having a second differential element provided in the signal input circuit, a second constant current source connected to the second differential element, and a third and a fourth loads respectively connected to the second differential element; a first source follower circuit that outputs a first differential voltage based on voltage drops developing across the first and second loads; and a second source follower circuit that outputs a second differential voltage based on the voltage drops developing across the third and fourth loads,

comprising a first current supply circuit that supplies a given current to the first and second loads when the first differential element is off, said first current supply circuit having a first current supply circuit end and another first current supply circuit end, said first current supply circuit end being connected to a first connection node between said first loads and said second loads and said first differential element, said other first current supply circuit end being connected to a second connection node between said first differential element and said first constant current source; and

a second current supply circuit that supplies the given current to the third and fourth loads when the second differential element is off, said second current supply circuit having a

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second current supply circuit end and another second current supply circuit end, said second current supply circuit end being connected to a third connection node between said third loads and said fourth loads and said second differential element, said other second current supply circuit end being connected to a fourth connection node between said second differential element and said second constant current source.

3. (Currently Amended) The differential circuit as claimed in claim 2, wherein each of ~~the first and the second source follower circuits is a complementary follower circuit having two MOS transistors~~

said first source follower circuit includes a first source follower circuit N-channel MOS transistor having a first source follower circuit N-channel MOS transistor end connected to a first power supply (Vcc), another first source follower circuit N-channel MOS transistor end connected to a first output terminal, and a first source follower circuit N-channel MOS transistor gate connected to the first load, and a first source follower circuit P-channel MOS transistor having a first source follower circuit P-channel MOS transistor end connected to a second power supply (GND), another first source follower circuit P-channel MOS transistor end connected to the first output terminal, and a first source follower circuit P-channel MOS transistor gate connected to the second load; and

said second source follower circuit includes a second source follower circuit N-channel MOS transistor having a second source follower circuit N-channel MOS transistor end connected to the first power supply (Vcc), another second source follower circuit N-channel MOS transistor end connected to a second output terminal, and a second source follower circuit N-channel MOS transistor gate connected to the third load, and a second source follower circuit P-channel MOS transistor having a second source follower circuit P-channel MOS transistor end connected to the second power supply (GND), another second source follower circuit P-channel MOS transistor end connected to the second output terminal, and a second source follower circuit P-channel MOS transistor gate connected to the fourth load.

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4. (Currently Amended) The differential circuit as claimed in claim 2, wherein:

the first differential element includes two N-channel MOS transistors having a first differential element N-channel MOS transistor ends connected to the first connection node, another first differential element N-channel MOS transistor end connected to the second connection node and said first differential element having first differential element N-channel MOS transistor gates, said first differential element N-channel MOS transistor gates being connected to each other;

~~the first current supply circuit is connected to gates of the two N-channel MOS transistors;~~

the second differential element includes two P-channel MOS transistors having a second differential element P-channel MOS transistor ends connected to the third connection node, another second differential element P-channel MOS transistor end connected to the fourth connection node and said second differential element having second differential element P-channel MOS transistor gates, said second differential element P-channel MOS transistor gates being connected to each other; and

~~the second current supply circuit is connected to gates of the two P-channel MOS transistors~~

bias voltages are respectively applied to said first differential element N-channel MOS transistor gates and said second differential element P-channel MOS transistor gates so that tail currents flow between said first differential element N-channel MOS transistor ends and second differential element P-channel MOS transistor ends to said other first differential element N-channel MOS transistor end and said other second differential element P-channel MOS transistor end in a state which both the first and second differential circuits operate.

Claims 5-10 (Cancelled)